Borgford BioEnergy

A rural small business is creating employment opportunities, lumber products, and clean energy utilizing a grant and loan from the State Energy Program.

958 Westover Road, Colville WA 99114 | **Number of Employees: 27** | **Year Founded: 2008** | **Region Served: Stevens County** | **www.borgfordbioenergy.net**

Profile

A grant and loan from the State Energy Program enabled a small company in eastern Washington to purchase a mill and put 27 people back to work. Borgford BioEnergy has developed a novel way to burn mill waste in its patented gasifier system. The resultant heat dries lumber for the mill, which produces high-end lumber beams and other architectural products. The energy generated powers the mill, produces biochar for agricultural applications, and supplies surplus electricity to the grid in Stevens County.

Tiny Springdale, Washington, is located 40 miles northwest of Spokane in the farmlands of Stevens County. The town is home to 285 residents whose median household income is just over $28,000 – approximately half that of the median household income for the state as a whole. When the town's only mill closed five years ago, 25 workers lost their jobs.

Today, thanks to a grant and loan from the State Energy Program, and the dedicated efforts of small business owners Dale and Sharon Borgford, the mill has re-opened with a new focus – generating electricity, heat and biochar. Twenty-seven workers are now employed here.

"We all need electricity," said Dale Borgford, adding that re-starting a small business during a recession was meaningful for him and his family. "Small companies created jobs that built the nation."

The Springdale Lumber facility was purchased by the Borgfords in October 2009 after their company, Borgford BioEnergy, received Recovery Act grants and loans from the US Forest Service and the State Energy Office. The mill's previous owner had relied on propane to dry the lumber. That method was not sustainable due to rising energy costs. Borgford BioEnergy proposed to install an OctaFlame chamber to replace the propane system.

The OctaFlame chamber is a patented system that "cooks" mill waste, such as sawdust and lumber chips, in a process known as pyrolysis. In an airtight, oxygen-free metal vessel, the wood waste is heated to temperatures of up to 800˚F. The wood undergoes thermochemical decomposition, in which it breaks down into heat, energy, and a variety of products.

At full production, Borgford BioEnergy will supply enough electricity to power 3,500 homes.

The OctaFlame's closed-loop system captures these products and uses them for a number of downstream applications. Some of the heat is used to dry the mill's lumber products. The remaining heat is applied to water which, in the form of steam, powers a turbine. The energy generated from the turbine is used to power mill operations, and excess electricity is supplied to the power grid. Borgford predicts that when the system is fully operational, three-fourths of the electricity produced will be supplied to Avista Utilities, which serves the surrounding community.

The Borgfords envision a future in which small energy production facilities, reliant on biomass or other sources of green power, supply energy directly to the residents and businesses in their surrounding communities.

"If you have to haul the fuel more than 25 miles, it defeats the purpose [of local energy production]", says Borgford. Line loss – which refers to the energy lost as electricity is transmitted across power lines – means that small generating plants are most effective when they supply the immediate area's power needs.

"Avista is a willing partner," says Borgford, explaining that the energy company has been happy to work with the small business.

Eventually, the mill will produce additional products, including distilled water and biofuel. Borgford's vision is that no aspect of the lumber products or water used will go to waste – each component will either be converted into additional products or energy.

Biochar is one such product. Also known as *Terra Preta*, biochar is the charcoal byproduct left over after the pyrolysis process takes place. It is in high demand as an agricultural soil amendment due to its ability to increase soil fertility and sequester carbon into the ground. Borgford BioEnergy will produce biochar and provide it to Washington State University and Pacific Northwest National Laboratories for field tests in a variety of agricultural programs.

The OctaFlame at the Springdale mill is a prototype for a larger system that will be developed in the town of Kulzer, seven miles north. The Kulzer BioEnergy Park will use biomass from the surrounding area.

Kulzer will be a production-scale biomass energy facility that, when complete, will employ an estimated 40 workers and produce up to 9.4 megawatts of power – enough to support approximately 3,500 households in Stevens County.